REMARKS

Claims 1 – 5, 11, 18, 20, 23 – 25, 31, 47 – 56, and 58 - 61 are pending. Claims 1, 4, 24, 47, 52, 58, and 59 have been amended. Claims 60 and 61 have been added. Claim 57 has been cancelled. No new matter has been introduced. Reexamination and reconsideration of this application are respectfully requested.

In the June 23, 2005 Office Action, the Examiner rejected claims 1, 2, 18, 47, and 57 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,946,202 to Balogh ("the Balogh reference"). The Examiner rejected claim 3 – 5, 11, 20, 48 – 51, 57, and 59 under 35 U.S.C. § 103(a) as being unpatentable over the Balogh reference in view of U.S. Patent No. 6,650,560 to Macdonald et al. ("the Macdonald reference"). The Examiner rejected claims 23 – 25, 31, 52 – 56, and 58 under 35 U.S.C. § 103(a) in view of the Balogh reference in view of the MacDonald reference and further in view of U.S. Patent No. 6,504,423 to Riggio et al. ("the Riggio reference"). These rejections are respectfully traversed in so far as they are applicable to presently pending claims.

Independent claim 1, as amended, recites:

> A power converter, comprising:
> an input voltage system to receive an AC input voltage and to output a switched voltage;
> a transformer, coupled to said input voltage system, to receive the switched voltage and to output an intermediate voltage, **said transformer having a primary winding and a single secondary winding**, and
> a boost circuit, coupled to the transformer, to receive the intermediate voltage and output an increased voltage,
> **wherein said single secondary winding of said transformer is utilized as a boost inductor in the boost circuit and leakage inductance between the primary winding and the secondary winding is not utilized to boost the intermediate voltage to the output voltage**.

The Balogh reference does not disclose, teach, or suggest the power converter of claim 1, as amended. The Examiner states that Fig. 17 of the Balogh reference

discloses the receiving of AC power, a transformer T1, a boost circuit coupled to the transformer wherein the secondary winding (identified as LS1 and LS2) is configured as a boost inductor, and that the power converter is capable of receiving a DC input. *(Office Action, page 2)*. Specifically, the Balogh reference discloses (in Fig. 17 which the Examiner cites) that a DC source is utilized to generate a stabilized AC power supply, **which is the opposite of claim 1, which is receiving an AC input and outputting a DC voltage**.

Fig. 17 includes an isolation transformer with a primary winding and two secondary windings. The primary winding is connected to a DC source with two FETs functioning as choppers controlling the input to the primary of the isolation transformer. The transformer has one secondary winding coupled to the load (secondary load winding) and one secondary winding coupled to the regulator circuit (secondary control winding). The two windings are closely wound to have a high mutual coupling. There is a relatively high leakage inductance between the primary and the secondary windings. The secondary side regulation is performed in substantially the same manner as the described in Fig. 16A, wherein a high ripple voltage at the output of the capacitor is reflected from the secondary control winding to the secondary load winding due to the mutual inductance therebetween (the secondary control winding and the secondary load winding) and then across a load (R_l). The output voltage at the load is not a pure sinusoid, instead it is a chopped sinusoidal waveform with an envelope that is amplitude stabilized and power factor corrected. *(Balogh, col. 16, lines 10 – 42)*. <u>The leakage inductance between the primary and the secondary windings is relatively high and provides the necessary inductance for the Boost Mode regulation</u>. *(Balogh, col. 15,*

lines 29 – 33). The overall voltage boost is governed by the duty cycle of the FETs and by the ratio of the primary winding 293 to the secondary windings 295 and 297. The regulator circuit includes two diodes 261a and 261b, a pair of FETs 263 for shorting the output of the regulator secondary 259, and a capacitor 265. The regulator circuit is designed to allow a high ripple voltage at the output of the capacitor 265. *(Balogh, col. 16, lines 38 – 42)*.

This is not the same as a power converter including an input voltage system, a transformer, coupled to said input voltage system, to receive the switched voltage and to output an intermediate voltage, **said transformer having a primary winding and a single secondary winding**, and a boost circuit, coupled to the transformer, to receive the intermediate voltage and output an increased voltage, **wherein said single secondary winding of said transformer is utilized as a boost inductor in the boost circuit and leakage inductance between the primary winding and the secondary winding is not utilized to boost the intermediate voltage to the output voltage**, as is recited in claim 1, as amended.

First, the Balogh reference does not disclose a **single** secondary winding, as is recited in claim 1, as amended. In contrast, the Balogh reference discloses two secondary windings, i.e., a secondary control winding and a secondary load winding. In addition, the Balogh reference does not disclose that the single secondary winding is utilized as a boost inductor in a boost circuit because the boost mode regulation in the Balogh reference is provided by the leakage inductance between the primary winding and the secondary load and control windings *(Balogh, col. 15, lines 29 -33)*, by the duty cycle of the FETs 309 and 309, and by the ratio of the primary winding to the secondary

windings *(Balogh, col. 16, lines 36 – 42)*. In other words, both the primary winding and the secondary windings are utilized in boost mode regulation. As is explicitly stated in the Balogh reference, it is the leakage inductance between the primary and the secondary windings that provides the necessary inductance for the boost mode regulation. In addition, other factors are utilized to boost the intermediate voltage to the output voltage, not just the boost circuit and the single secondary winding of the transformer, as is recited in claim 1, as amended. Accordingly, claim 1, as amended, distinguishes over the Balogh reference.

The MacDonald reference does not make up for the deficiencies of the Balogh reference. The Examiner utilizes the MacDonald reference to disclose the use of the buck regulator circuitry and current programming circuitry. *(Office Action, page 3)*. Assuming, *arguendo*, that the MacDonald reference discloses all that the Examiner states that it does, the MacDondald reference does not disclose a power converter including an input voltage subsystem, a transformer including a primary winding and a single secondary winding, and a boost circuit, **wherein said single secondary winding of said transformer is utilized as a boost inductor in the boost circuit and leakage inductance between the primary winding and the secondary winding is not utilized to boost the intermediate voltage to the output voltage**. As was pointed out in our April 28, 2005 Amendment, the MacDonald reference does not disclose that a secondary winding of its transformer is utilized as a boost inductor in the boost circuit. Accordingly, claim 1, as amended, distinguishes over the MacDonald / Balogh combination.

Independent claim 47, as amended, recites limitations similar to claim 1, as

amended. Accordingly, applicant respectfully submits that independent claim 47 distinguishes over the Balogh / MacDonald combination for reasons similar to those discussed above in regard to claim 1, as amended.

Claims 2 – 5, 11, 18, 20, and 48 - 51 depend, indirectly or directly, on claims 1 and 47, both as amended. Accordingly, applicant respectfully submits that dependent claims 2 – 5, 11, 18, 20, and 48 - 51 distinguish over the Balogh / MacDonald combination for the same reasons as those discussed above in regard to independent claim 1, as amended.

The applicant respectfully notes that the Examiner's utilization of the Riggio reference as a tertiary reference for disclosing an application of a DC voltage to a center tap of a secondary winding of a transformer is incorrect for claims 23 – 25. 31. 52 – 56, and 58. The Riggio reference is disclosing the application of a DC voltage to a primary winding of a transformer, not a **secondary** winding of a transformer. Accordingly, independent claim 58 distinguishes over the cited references. Specifically, independent claim 58, as amended, recites:

> A power converter capable of receiving an AC input voltage and a DC input voltage, comprising:
> a first capacitor, coupled to the DC input voltage, which is charged to the DC input voltage;
> a transformer, coupled to a primary switching circuit and utilized if an AC input voltage is supplied, said transformer having a primary winding and a secondary winding where the secondary winding includes a center tap to separate the secondary winding into a first autowinding and a second autowinding and **the DC input voltage is connected to the center tap of secondary winding of the transformer;** and
> **a control circuit coupled to switching devices, the switching devices coupled to the secondary winding, where the control circuit and the switching devices control the first autowinding and the second autowinding to charge a second capacitor to a DC voltage, wherein the DC input voltage and the DC voltage are added together to create an increased voltage at a first node.**

The Balogh and MacDonald references do not disclose, teach, or suggest the power converter of claim 58. The Examiner states that the Balogh and the MacDonald references do not disclose that a DC input is supplied to the center tap of a transformer. *(Office Action, page 4)*. The applicant agrees with the Examiner and respectfully submits that claim 58 distinguishes over the Balogh / MacDonald combination, even though claim 58 actually recites that the DC input is supplied to the center tap of a secondary winding of the transformer.

The Riggio reference does not make up for the deficiencies of the MacDonald reference. The Examiner states that the Riggio reference discloses the supplying of a DC input voltage to a center tap of a transformer to provide galvanic isolation and minimal voltage overshoot in the secondary which minimizes filtering requirements. *(Office Action, page 3)*. As was noted previously in the April 28, 2005 amendment, in making this statement, **the Examiner is not addressing the highlighted claim limitations recited above**. Claim 58 recites that a DC input voltage is connected to a center tap of a **secondary winding** of the transformer. The Examiner instead that states that DC input is applied to a center tap of the transformer. Specifically, the Riggio reference discloses that a DC voltage is applied to a center tap of a primary winding *(Riggio, Fig. 2, col. 10, lines 5 – 10)* not **a center tap of a secondary winding**, as is recited in claim 58. The Examiner's cited statement that the Riggio reference discloses that providing a DC input to the center tap of the transformer for purpose of providing galvanic isolation and minimum voltage overshoot in the secondary and thus minimizing the filtering requirements shows that the Riggio reference does not disclose applying the DC input voltage to the center tap of a secondary winding. The application

of the DC input voltage to the center tap of the secondary winding would not provide galvanic isolation and minimum voltage overshoot in the secondary winding because the DC input is being applied directly to the secondary winding and thus no isolation could occur with the secondary winding. Further, the application of the DC input voltage to the secondary winding also would not minimize the filtering requirements because the DC input is input directly into the secondary winding and would not be filtered. Accordingly, claim 58, as amended, distinguishes over the Riggio / Balogh / MacDonald combination.

Claim 58 further distinguishes over the cited references. The Examiner did not explain in the office action how any of the cited references disclose **a control circuit coupled to switching devices, the switching devices coupled to the secondary winding, where the control circuit and the switching devices control the first autowinding and the second autowinding to charge a second capacitor to a DC voltage, wherein the DC input voltage and the DC voltage are added together to create an increased voltage at a first node,** as is recited in claim 58, as amended. The MacDondald reference and the Balogh reference do not disclose the utilization of a first autowinding and a second autowinding of the secondary winding. The Examiner never states how the Riggio reference makes up for this deficiency because he never points out which figure and associated part of the specification disclose the above-highlighted limitation. Accordingly, applicant respectfully submits that claim 58, as amended, further distinguishes over the Balogh / MacDonald / Riggio reference combination.

Independent claim 52, as amended, recites limitations similar to those recited in

claim 58. Accordingly, applicant respectfully submits that independent claim 52, as amended, distinguishes over the Balogh / MacDonald / Riggio combination, for similar reasons to those discussed above in regard to independent claim 58.

Claims 23 – 25, 31, and 53 - 56 depend, indirectly or directly, on independent claims 58 and 52, respectively. Accordingly, applicant respectfully submits that claims 23 – 25, 31, and 53 - 56 distinguish over the Balogh / MacDonald / Riggio combination, for the same reasons as discussed above in regard to independent claim 58.

New independent claim 60 distinguishes over the cited references. Independent claim 60 recites:

> A power converter capable of receiving an AC input voltage and a DC input voltage, comprising:
>
> a transformer, coupled to a primary switching circuit, said transformer having a primary winding and a secondary winding, the secondary winding including a center tap to separate the secondary winding into a first autowinding and a second autowinding, **the DC input voltage being directly applied to the center tap of the secondary winding of the transformer**; and
>
> a control circuit coupled to a plurality of switching devices, the plurality of switching devices coupled to the secondary winding, wherein **the control circuit and the switching devices control the first autowinding and the second autowinding to output an increased DC voltage, the increased voltage being an addition of a voltage across the first autowinding and a voltage across the second autowinding**.

As noted above, the Examiner agrees that the Balogh and MacDonald reference do not disclose a DC input voltage being directly applied to the center tap of the secondary winding of the transformer, as is recited in claim 60. As noted above, the Riggio reference does not make up for the deficiencies of the Balogh and MacDonald references because the Riggio reference discloses applying a DC input voltage to a primary winding and not to a center tap of a **secondary** winding. Accordingly, applicant

respectfully submits that claim 60 distinguishes over the Riggio / Balogh / MacDonald combination. In addition, claim 60 further distinguishes over the cited references because none of the cited references disclose that **a control circuit and switching devices control a first autowinding and a second autowinding to output an increased DC voltage, where the increased voltage is an addition of a voltage across a first autowinding and a voltage across a second autowinding**. Accordingly, applicant respectfully submits the claim 60 further distinguishes over the Balogh / Riggio / MacDonald combination.

Claim 61 depends directly on claim 60. Accordingly, applicant respectfully submits that claim 61 distinguishes over the cited references for the same reasons as those discussed above in regard to claim 60.

Claim 61 further distinguishes over the cited references. Claim 61 recites:

> The power converter of claim 60, further including **a buck regulator** to receive the increase voltage, to generate a regulated voltage, and **to output the regulated voltage as an output voltage and also to output a reference voltage.**

The Balogh and the Riggio references do not disclose a buck regulator. Accordingly, claim 61 further distinguishes over Balogh / Riggio combination. The Examiner states that the MacDonald reference discloses a buck regulator, i.e., reference numeral 28 in Fig. 1A. *(Office Action, page 3)*. However, the MacDonald reference discloses that only a low DC voltage is output from the buck regulator. There is no disclosure that both a low DC voltage (akin to claim 61's output voltage) and a reference voltage are output. The MacDonald reference discloses the outputting of a second output voltage (to be used to power an electronic device), but this is not a

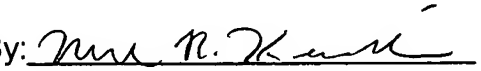
reference voltage. Support for claim 61's outputting of a reference voltage is found in Figs. 1(a), 1(b), 1(c), 3, and 4(d). Accordingly, applicant respectfully submits that claim 61 further distinguishes over the Balogh / MacDonald / Riggio combination. Claim 4 recites limitations similar to claim 61. Accordingly, applicant respectfully submits that claim 4 further distinguishes over the Balogh / MacDonald / Riggio combination for reasons similar to those discussed above in regard to claim 61.

Applicant believes that the foregoing amendments place the application in condition for allowance, and a favorable action is respectfully requested. If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles telephone number (213) 488-7100 to discuss the steps necessary for placing the application in condition for allowance should the Examiner believe that such a telephone conference would advance prosecution of the application.

Respectfully submitted,

PILLSBURY WINTHROP SHAW PITTMAN LLP

Date: December 23, 2005

By: 

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